# APPENDIX F
# FINAL DRAFT BIOLOGICAL ASSESSMENT

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# BIOLOGICAL ASSESSMENT*

## for the proposed

## Highwood Generating Station
## Great Falls, Montana

**United States Department of Agriculture**
**Rural Development, Utilities Programs**
**1400 Independence Ave., SW, Stop 1571**
**Washington, D.C. 20250**

**January 2007**

*This Final Draft Biological Assessment has been submitted to the U.S. Fish and Wildlife Service. It is now under review by the Service and their Biological Opinion is pending.

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FIGURES

## SUMMARY

### Determination of Effects

Implementation of the proposed federal action WILL HAVE NO EFFECT on the threatened Canada lynx, and MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT the threatened bald eagle.

### Consultation Requirements

In accordance with the Endangered Species Act of 1973, as amended (ESA), and its implementation regulations, the U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) is required to request written concurrence from the United States Fish and Wildlife Service (FWS) with respect to determinations of potential effects on the threatened bald eagle and threatened Canada lynx.

### Need For Reassessment Based On Changed Conditions

The Biological Assessment findings are based on the best current data and scientific information available. A revised Biological Assessment must be prepared if: (1) new information reveals effects which may impact threatened, endangered or proposed species or their habitats in a manner or to an extent not considered in this assessment; (2) the proposed action is subsequently modified in a manner that causes an effect, which was not considered in this assessment; or (3) a new species is listed or habitat identified, which may be affected by the action.

## INTRODUCTION

Southern Montana Electric Generation and Transmission Cooperative, Inc. (SME) proposes to build a 250-megawatt (MW) coal-fired power plant called the Highwood Generating Station (HGS) and 6 MW of wind generation at a site near Great Falls, Montana. SME has applied for a loan guarantee to construct the HGS from the RUS. SME has also applied for an air quality permit and other applicable permits and licenses which are administered by the Montana Department of Environmental Quality (DEQ). The loan application constitutes a federal action, and the RUS is the federal action agency under the ESA. Under various provisions of the ESA, the RUS must conduct a Biological Assessment (BA) to identify whether these species are present in the area of effect, and insure that any action authorized, funded, or implemented by the RUS is not likely to: (1) adversely affect listed species or designated critical habitat; (2) jeopardize the continued existence of proposed species; or (3) adversely modify proposed critical habitat.

In accordance with Section 7(c) of the ESA, the FWS (letter from Mark Wilson, Field Supervisor, Ecological Services, Montana Field Office, dated May 12, 2005) determined

that two species, both listed as threatened under the ESA, could be in the area of the proposed HGS: Canada lynx (*Lynx canadensis*) and bald eagle (*Haliaeetus leucocephalus*). No species listed as endangered, proposed for listing, or candidates for listing under the ESA were identified.

In accordance with the National Environmental Policy Act (NEPA), RUS and DEQ issued a Draft Environmental Impact Statement (DEIS) for the HGS in June 2006. This Biological Assessment analyzes the potential effects of the proposed federal action identified in the DEIS to the Canada lynx and bald eagle.

## PROPOSED PROJECT

### Project Description

The proposed HGS would consist of a 250-MW (net) generating station utilizing Circulating Fluidized Bed (CFB) technology to burn coal, and four 1.5-MW wind turbines. The HGS would be built at a location called the Salem site, located in Sections 24 and 25, T21N R5E about eight miles east of the city of Great Falls in Cascade County, Montana (Figure 1). Elevation at the site is approximately 3320 feet above sea level.

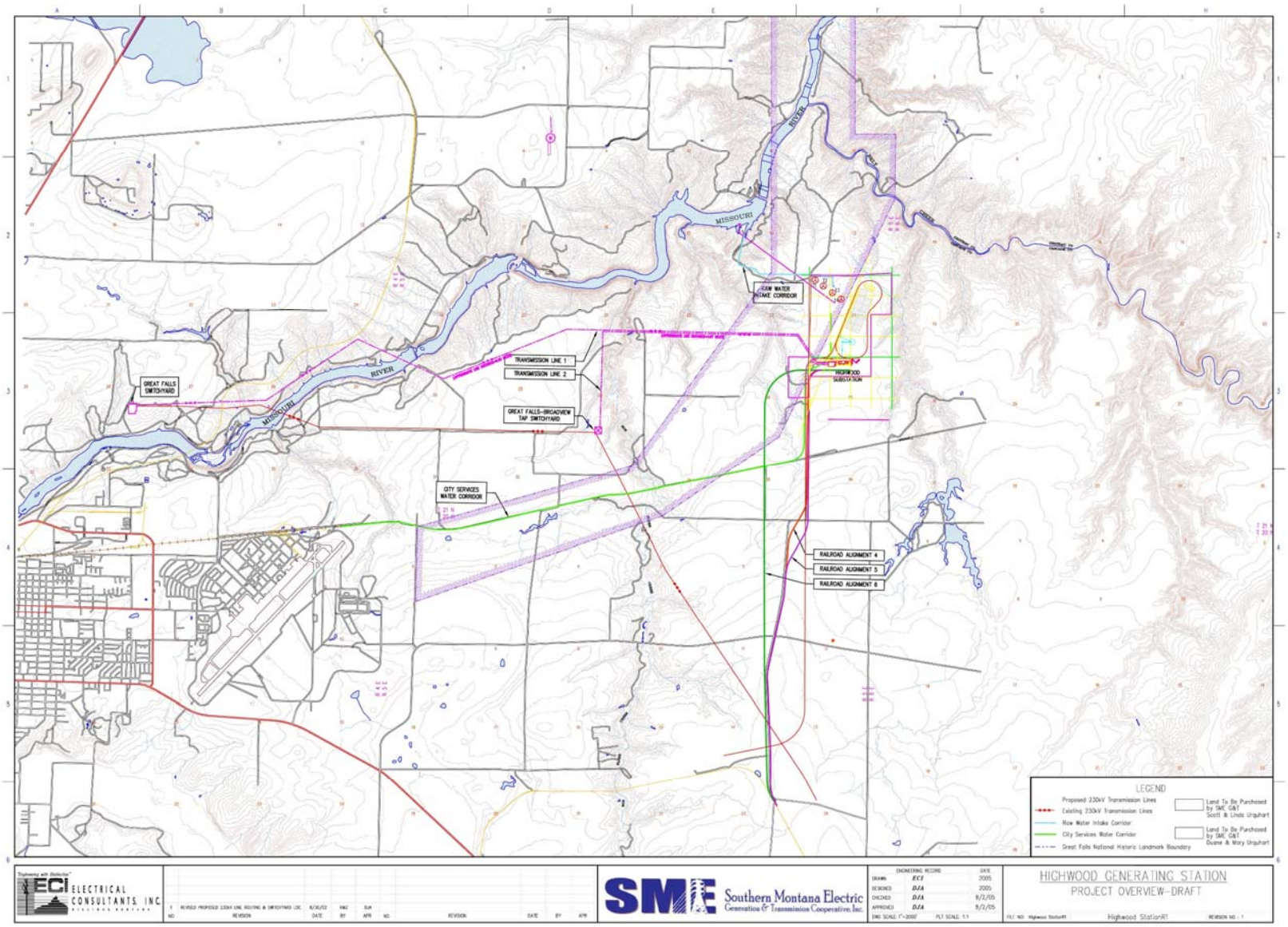
The HGS would consist of a CFB boiler, steam turbine generator, water-cooled condenser, wet cooling tower, hydrated ash reinjection or equivalent flue gas desulfurization (FGD) system, selective non-catalytic reduction process, baghouse, and material handling system. An activated carbon injection system could be installed and operated if necessary for mercury control. Ash from the coal combustion process would be handled dry and be disposed of onsite in an engineered monofill, lined with clay.

Under peak operating conditions, the plant would withdraw and use approximately 3200 gallons of water per minute from the Missouri River for cooling. Sub-bituminous coal would be purchased from existing permitted mines in southeastern Montana and would be delivered approximately twice per week in 110-car unit trains. Limestone and ammonia would be used to reduce air pollutants. Limestone would be purchased from an existing permitted mine and would be delivered to the HGS by truck or train. Anhydrous ammonia would also be delivered by truck or train.

Construction is estimated to take about 48 months from the start of preliminary engineering to commercial operation of the plant. Site grading and preparation would require about two months and would be followed by foundation construction, which would require about one year. Boiler and baghouse construction would begin about five months after foundation construction begins and would be completed in about two years. Construction of the four wind turbines would occur concurrently. The towers are anticipated to be 262 feet high at the rotor. Each wind turbine would have three blades, with an overall diameter of 250-270 feet, or a radius of 125-135 feet. Thus the total height of the structures would be approximately 400 feet.

In addition to the HGS and wind turbines on the Salem site, a rail spur, raw water intake at Morony Reservoir, raw water pipeline, two 230kV transmission lines, a switchyard, potable and wastewater lines and access roads would be built (Figure 1).

**Figure 1. Vicinity map of Highwood Generating Station, Salem Site.**



## Project Area

The project area and its biological resources were thoroughly described in Section 3.4 and Appendix F of the DEIS. Those descriptions are hereby incorporated by reference.

## SPECIES ASSESSMENT

### Canada Lynx (*Lynx canadensis*)

#### Population and Habitat Status

| Project Within Known Lynx Range | Lynx Activity In Project Area | Foraging Habitat Available in Project Area | Denning Habitat Available in Project Area |
|---|---|---|---|
| No | No | No | No |

Lynx have been documented in Cascade County (Foresman 2001), but not in or near the vicinity of the proposed HGS Salem site (MTNHP 2006). Lynx have not been reported within 10 miles of the project vicinity (MTNHP 2005). The FWS has proposed a rule to designate critical habitat for the lynx; the final critical habitat designation is due in November 2006. There will be no designated critical habitat near the proposed HGS project.

The lynx is a denizen of the boreal forest (Foresman 2001). Its range and habitat is closely associated with that of its primary winter prey, the snowshoe hare (*Lepus americanus*) (Koehler and Aubrey 1994); snowshoe hare habitat does not overlay the proposed HGS site (Hart et al. 1998). In Montana east of the Continental Divide, lynx habitat is subalpine forests above 5400 feet (the HGS site is approximately 3320 feet), dominated by subalpine fir (*Abies lasiocarpa*); secondary habitat is intermixed Engelmann spruce (*Picea engelmannii*) and Douglas-fir (*Pseudotsuga menziesii*) habitat types where lodgepole pine (*Pinus contorta*) is a major seral species (MTNHP 2006). Den sites tend to be in mature or old-growth forest stands with a high density of downed logs (Koehler and Aubrey 1994). Foraging habitat ranges from forest edge to clearings, young forests, fire areas, etc.; however, they avoid large open habitats (MTNHP 2006). Neither foraging nor denning habitat is available in or near the proposed HGS Salem site.

#### Direct, Indirect and Cumulative Effects Analysis

Lynx are not known to occur in or near the project area. There is no proposed designated critical habitat at or near the project area. The project area does not contain suitable habitat for foraging or denning. Therefore the proposed HGS project would have no adverse effects on the Canada lynx.

#### Determination of Effects

Implementation of the proposed federal action would have NO EFFECT on the Canada lynx, based on the analysis provided above.

### Recommendations for Removing, Avoiding, or Compensating Adverse Effects

No adverse effects are expected.

## Bald Eagle (*Haliaeetus leucocephalus*)

### Population and Habitat Status

| Project Within Known Bald Eagle Range | Project Within 2.5 Miles of Known Bald Eagle Nest | Project Within 2.5 Miles of Known Bald Eagle Roost | Known Foraging Habitat At or Near Project Site |
|---|---|---|---|
| Yes | Yes | No | No |

The FWS has proposed removal of the bald eagle from the list of threatened species under the ESA; the bald eagle population is considered "recovered," and the bald eagle will continue to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (71 FR 8238, February 16, 2006). For example, in 2005 there were 396 current bald eagle territories in Montana, compared to 31 in 1980; there were 49 territories in the region encompassing the proposed HGS project (Dubois 2006).

There is a bald eagle nest site near the confluence of Belt Creek and the Missouri River, approximately one mile downstream from Morony Dam (Kristi Dubois, native species coordinator, Montana Department of Fish, Wildlife and Parks, personal communication, May 18, 2005). Depending on the final configuration of the HGS, the site would be about 3.0 miles from the plant and about 2.3 miles from the nearest proposed ash pile. The site is about 1.7 miles from the proposed raw water pipeline intake on the Missouri River above Morony Dam. The nest site elevation is about 2800 feet, about 500 feet lower than the HGS site and about 100 feet lower than the raw water intake site. The nest is not visible from either site. The nest was inactive in 2004 (Kristi Dubois, personal communication, May 4, 2005) but was active in 2005 and produced one young (Graham Taylor, personal communication, June 27, 2005) and was again active in 2006, producing one young (Graham Taylor, personal communication, October 18 and November 3, 2006). The nest site was visited on November 22, 2006; the branch supporting the nest had apparently broken during the summer, and the nest remnants were on the ground below the tree. There are no other known bald eagle nests or territories upstream from Belt Creek to the City of Great Falls (Graham Taylor, personal communication, June 27, 2005).

The Montana Bald Eagle Management Plan (MBEWG 1994) provides guidelines for management activities in three zones established around an active bald eagle nest: Zone I (Nest Site Area) includes the area within 0.25 mile of an active nest; Zone II (Primary Use Area) encompasses the area between 0.25 and 0.50 mile from an active nest; Zone III (Home Range) is defined as including all suitable foraging habitats within 2.5 miles of all nests that have been active within five years. This zone is managed to maintain suitability of foraging habitat, minimize disturbance within key areas, minimize hazards, and maintain the integrity of the breeding area. Depending on final configuration, a small part of the proposed HGS Salem site would be within Zone III of the known nest site;

however, the HGS would be located in an area with no potential nest habitat, no perch trees, no screening vegetation that would attract bald eagles, and that is not visible from the nest site. Habitat at the proposed site is grain fields (see Figures 2-21 and 2-22 on page 2-47 of the DEIS) that would not be considered attractive foraging habitat for bald eagles.

The raw water intake would be located about 0.4 mile upstream from Morony Dam, which in turn is about 1.3 miles upstream from the nest site (within nest management Zone III), i.e., Morony Dam and its associated facilities are between the site and the raw water intake. The raw water intake would consist of a lateral pipe that would extend into Morony Reservoir; a passive intake screen installed on the end of the pipe to prevent sediment, debris and fish from entering the system; a below-grade concrete sump (vertical cylinder) located outside the floodplain to collect water from the pipe; and a small pump house placed on top of the sump and located approximately on grade, which would contain two pumps to pump water through a buried pipeline to the plant site (Figure 1). Although the raw water intake site is adjacent to bald eagle foraging habitat in Morony Reservoir (see Figure 2-26 on page 2-51 of the DEIS), the site does not support suitable trees for nesting or communal roosts.

As part of the delisting process, the FWS has also developed draft bald eagle management guidelines (FWS 2006). The proposed HGS plant site would fall within "Category B" of these guidelines, i.e., building construction of three or more stories/building construction where the footprint is larger than 0.5 acre: if there is no similar activity within one mile of the nest, and if the activity will not be visible from the nest, the recommended offset distance for construction from the nest is 660 feet (0.125 mile). Clearing, external construction and landscaping should be done outside the nesting season (defined as January-August for Montana).

The proposed raw water intake site would fall under "Category A" of these guidelines, i.e., alteration of shorelines/construction of roads and linear facilities: if there is no similar activity within one mile of the nest, and if the activity will not be visible from the nest, the recommended offset distance for construction from the nest is 330 feet (0.06 mile). Clearing, external construction and landscaping should be done outside the nesting season (defined as January-August for Montana).

Bald eagles also stop during migration and winter along the Missouri River, where they prey on fish and waterfowl, and feed on carrion. There may be more bald eagles along the Missouri River in the HGS project area during these periods than during nesting season. Likely concentration areas would include sites that would also concentrate prey, such as below dams or other areas of open water. However, there are no known communal roosts in the project vicinity.

**Direct, Indirect and Cumulative Effects Analysis**

Construction of the HGS may cause minimal, short-term displacement/disturbance of transitory bald eagles. Depending on final configuration, most of the HGS would be

farther than 2.5 miles from, and not visible from, the only known bald eagle nest site in the general area, nor would the HGS be placed in either known or potentially attractive foraging habitat. Therefore, disturbance to nesting eagles during construction and operation of the HGS should be minimal, as suggested by information provided in both the Montana and FWS bald eagle management guidelines.

Construction of the raw water intake at Morony Reservoir could result in short-term increases in turbidity near the site, which could affect bald eagle foraging. Although the intake would be about 1.3 miles from the known nest site, it would not be visible from the nest site and, once constructed, would create negligible long-term above-ground disturbance. Therefore this impact should be minimal.

Construction of the rail spur and access roads should not affect bald eagles, but there would be a potential for increased wildlife mortality from vehicles or trains during construction and operation. Bald eagles could be attracted to this carrion, which would increase the potential for vehicle or train strikes. However, the rail spur and access roads would be constructed in agricultural habitats, primarily grain fields. Consequently, the wildlife mortality associated with these facilities would likely be low, and thus potential impact to bald eagles would also be expected to be low. Also, in an effort to minimize mortality to bald eagles and other scavenging wildlife, SME would monitor and remove carrion as described below.

Construction, operation and maintenance of transmission lines could potentially affect bald eagles either by wire strikes (particularly at the proposed crossing of the Missouri River) or electrocution. There are several existing transmission lines in the general vicinity, including several that cross the river in the reach from the Great Falls substation to Morony Dam, and no known wire strikes, electrocutions or other hazards to bald eagles have been reported. Therefore this impact would be expected to be low.

The four wind turbines would be constructed at the HGS Salem site, which is not known as potentially attractive bald eagle foraging habitat. The design of the proposed HGS wind turbines (low-speed and tubular construction) has a substantially lower bird strike rate than earlier, smaller lattice-supported wind turbine generators with faster moving blades. However, there is still a potential for collisions with the stationary towers or spinning blades. The FWS guidelines (FWS 2006) recommend that wind turbines and high voltage transmission lines be sited away from bald eagle communal roost sites to avoid collisions, where feasible; and that industry-accepted measures be employed to prevent birds from being electrocuted on structures.

**Determination of Effects**

Implementation of the proposed federal action MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT the bald eagle, based on the following rationale:

The proposed HGS Salem plant site does not constitute attractive bald eagle habitat, and there is no known bald eagle use of the site. Any use of the site is most likely by

transitory birds. There are no known communal roosts in the area affected by the proposed project. There is one known nest/territory, located more than one mile from any proposed activity associated with the project. No proposed activity would be visible from the nest. Most potential impacts associated with construction of the project, such as increased turbidity in the Missouri River (bald eagle foraging habitat) would be minor and short-term.

The greatest potential impacts from construction and operation of the project would be associated with transmission lines (electrocution and wire strikes, particularly at the transmission line crossing of the Missouri River), wind turbines (collisions with towers or spinning blades), and vehicle or train strikes associated with access roads and the proposed rail spur. However, there have been no reports of bald eagle strikes at other transmission lines across the Missouri River in the same general area.

Most avian-safe transmission design and construction practices were developed for use with distribution voltage structures where special structure design including longer cross arms and additional phase spacing was required to obtain a minimum of 60" between energized conductors and grounded hardware. High voltage transmission line design and construction is intrinsically avian-safe using the 60" minimum spacing guideline. The 230kV transmission lines proposed for HGS are designed as single pole structures utilizing alternating supported post construction. Because of NESC clearance requirements, the minimum phase-to-phase distance in any direction will be 17'-0" and the minimum phase-to-ground distance in any direction will be 8'-0".

For the proposed Missouri River transmission line crossing, the design will likely employ visibility enhancing devices in the form of marker balls placed intermittently on the uppermost conductor in varying configurations. This requirement will most likely be dictated by the FAA, but inclusion of these devices will also serve to reduce the risk of avian collision with the new lines.

The proposed wind turbines would not be constructed in an area of known bald eagle use or any known bird migration pathway, and the proposed access roads and rail spur would be constructed through habitat (agricultural fields) that is unlikely to produce substantial amounts of carrion that may attract bald eagles.

**Recommendations for Removing, Avoiding, or Compensating Adverse Effects**

The following measures are recommended to remove or avoid the potential adverse effects discussed above:

- During construction of the HGS project, no activity would occur within 660 feet of the known nest site/territory at the confluence of Belt Creek and the Missouri River during the bald eagle breeding/nesting/fledging season (January through August);

- During operation of the project, SME would comply with all federal and state permits for air quality, water quality, solid waste and other resources that could potentially adversely affect bald eagles;
- Transmission lines would be constructed and maintained according to industry-established best practices to avoid or minimize electrocutions and wire strikes (APLIC and USFWS 2005);
- Wind turbines would be constructed, to the extent practicable, according to USFWS (2003) guidelines;
- Carrion would be defined as a dead animal too large for a bald eagle to carry in flight, i.e., bigger than a jackrabbit. Once every two weeks, or whenever reported to SME (whichever is shorter), SME would patrol access roads and the rail spur and remove carrion to a site where vehicle or train strikes would not occur.

**CONSULTATION**

11/9/2004: Letter from Mark Wilson, Field Supervisor, Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service, providing a list of endangered or threatened species that could potentially occur in the HGS project area, and a discussion of requirements for a BA.

3/18/2005: Meeting between Mark Wilson (Field Supervisor) and Sierra Harris (Biologist), Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service; Jeff Chafee, Bison Engineering, Inc.; Patrick Farmer, WESTECH Environmental Services, Inc.; and Kenneth Reich, Esq. (via telephone conference), Perkins, Smith and Cohen, LLP; regarding the HGS project, schedule for a BA, and coordination with USFWS during BA preparation.

5/4/2005: Email from Kristi Dubois, Native Species Coordinator, Montana Department of Fish, Wildlife and Parks, to members of the Montana Bald Eagle Working Group, containing nest productivity results from 2004.

5/10/2005: Phone conversation between Sierra Harris, Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service and Patrick Farmer, WESTECH, regarding letter with updated list of endangered or threatened species for the HGS project BA.

5/12/2005: Letter from Mark Wilson, Field Supervisor, Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service, providing an updated list of endangered or threatened species that could potentially occur in the HGS project area, and a discussion of requirements for a BA.

5/18/2005: Email from Kristi Dubois, Native Species Coordinator, Montana Department of Fish, Wildlife and Parks, to Patrick Farmer of WESTECH discussing location and monitoring of bald eagle nest at mouth of Belt Creek.

6/27/2005: Email from Graham Taylor, Wildlife Manager, Montana Department of Fish, Wildlife and Parks, to Patrick Farmer of WESTECH regarding 2005 nesting activity at

bald eagle nest at mouth of Belt Creek, and other wildlife activity in HGS project vicinity.

1/31/2006: Phone conversation between Cory Loecker, Area Wildlife Biologist, Montana Department of Fish, Wildlife and Parks, and Patrick Farmer, WESTECH, regarding location of bald eagle nest on Belt Creek and other wildlife activity in the HGS project vicinity.

6/21/2006: Phone conversation between Katrina Dixon (replaced Sierra Harris), Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service and Patrick Farmer, WESTECH, regarding HGS project, history of BA preparation to date.

9/11/2006: Email summary of phone conversation between Katrina Dixon, Ecological Services, Montana Field Office, U.S. Fish and Wildlife Service and Patrick Farmer, WESTECH, regarding BA: "I finally spoke with Katrina Dixon of the USFWS re: the Highwood Generating Station project, and whether or not a BA would be required. It was my understanding that Ms. Dixon had not reviewed the DEIS for the project. I described the situation, i.e., that the EIS concluded that there would be no adverse effects from the project on the bald eagle or Canada lynx. I relayed RUS' question about whether or not a BA would be necessary.

Ms. Dixon told me that if the project is considered a major construction activity under Section 7(c) of the ESA (which it is), a BA is required as a procedural matter even if the project would not have not significant impacts an ESA species. There is a bit of a grey area here in that, if the DEIS used ESA language, e.g. "is not likely to adversely affect," then the DEIS could theoretically be used as a BA if the other requirements for a BA are also addressed. So we reviewed the language used in the DEIS. Ms. Dixon stated (and I agree) that the language used for the bald eagle on page 4-59 of the DEIS ("If these precautions are adhered to, the project would have no adverse effect on bald eagles") sounds like the ESA equivalent of "may affect, not likely to adversely affect" which requires a BA.

Ms. Dixon also indicated that a BA would be a prudent course of action, that the USFWS is more comfortable with a BA to review than reviewing and commenting on "fragments of a BA" presented in a DEIS.

Ms. Dixon emailed the language the USFWS uses in its ESA letters (which is the same language that was used in the HGS letter) for the preparation of a BA.

In summary, it was my impression that the RUS could more formally approach the USFWS about substituting the DEIS for a BA, but it was my impression that the USFWS would be uncomfortable with this approach. The easiest approach, from the USFWS' point of view, would be to submit a BA and request a letter of concurrence."

9/22/06: Phone conversation between Richard Fristik (USDA-RD) and Katrina Dixon (USFWS Helena Office). Ms. Dixon provided clarification on the determinations of "may

affect" and "no affect", and the follow-on actions that each requires. She said that language in the HGS DEIS ("if these precautions are adhered to, the project would have no adverse effect on bald eagles."; P. 4-59), was interpreted by her agency as sating that there is a chance of an adverse effect. Ms. Dixon said even if there is a slight chance of an effect, a BA is necessary. Fristik raised the possibility of the DEIS itself (section on endangered/threatened species impacts) serving as the BA; Dixon reiterated that her agency's preference was for a stand alone BA, versus trying to locate the pertinent language in the EIS. Based on this discussion, USDA-RD undertook preparation of a BA for the HGS.

10/18/2006: Phone conversation between Graham Taylor, Wildlife Manager, Montana Department of Fish, Wildlife and Parks, and Patrick Farmer of WESTECH regarding 2006 nesting activity at bald eagle nest at mouth of Belt Creek.

11/3/2006: Email from Graham Taylor, Wildlife Manager, Montana Department of Fish, Wildlife and Parks, to Patrick Farmer of WESTECH providing exact location of bald eagle nest at mouth of Belt Creek.

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